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THE PLANETARY NEBULA I. C. 2003

The small nebula No. 2003 in Dreyer's *Index Catalogue* ($\alpha = 3^h 47^m 26^s$, $\delta = +33° 27'.7$, 1860) was discovered by Espin[1] in 1907. He described it as about 5″ in diameter, slightly elongated north-south, equal in light to a 10th magnitude star, and suggesting a planetary. I find no mention of its spectrum in any publication and therefore offer the following data.

The nebula is in fact a planetary. It appears on two of my plates taken with objective prisms attached to a 10-inch Cooke lens of 45 inches focus. These plates are:

15° prism, 270^m exposure, Seed 30, spectrum unwidened.
6° prism, 300^m exposure, Seed 30, spectrum 0.4^{mm} wide.

Nine bright images can be well seen on a very faint continuous spectrum. With relative intensities, these are:

N_1	Intensity	15	H_γ	Intensity	3
N_2	"	8	H_δ	"	2
H_β	"	3	H_ϵ	"	1
4686	"	5	H_ζ	"	1
4363	"	1			

Two other exceedingly faint bright lines appear, as nearly as can be judged, in the position of the well known nuclear bright bands at 4471 and 4267. The scale is too small to distinguish with certainty between nucleus and nebula.

The spectrum as a whole is brighter than that of I. C. 351, which appears on the same plates.

Mt. Wilson Observatory. EDWIN P. HUBBLE.

TWELVE NEW VARIABLE STARS.

The following is a list of uncataloged variable stars collected while examining plates on the "Blink-mikroscope," for the most part at the Yerkes Observatory. At that institution I had the privilege of referring to the Bruce plates which Mr. Barnard very kindly always offered for the purpose of checking suspicious objects found on my own plates. In this way some idea could be immediately formed of the nature of the variability considered.

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[1] *Monthly Notices, R. A. S.*, **67**, 360.

No.	1900.0			Observed Range in Photographic Magnitudes.
No. 1[1]	$\alpha = 0^h55^m14^s$	$\delta = +60^\circ$	11′.0	13 to fainter than 17.5
2[2]	5 22 8	−28	51 .2	9 to 12.5
3[3]	6 33 8	+ 9	5. 0	13 to fainter than 17.5
4[4]	6 34 7	+ 8	56 .3	16 to 17.5
5[5]	6 34 11	+ 8	56 .8	15.5 to 17
6[6]	6 35 35	+10	32 .1	13 to 15
7[7]	6 41 40	+ 8	7 .3	10 to 15
8[8]	18 23 45	−11	15 .1	12.5 to 14.5
9[9]	19 56 55	+22	50 .0	11 to 14
10[10]	21 33 6	+23	22 .7	12 to 17
11[11]	23 46 59	+55	29 .4	13.5 to 16. (Algol)
12[12]	23 47 35	+56	11 .2	13 to fainter than 18

EDWIN P. HUBBLE.

PHOTOMETRIC PARALLAXES OF NINE CEPHEID VARIABLES

The parallaxes and space co-ordinates of 139 Cepheid variables of the galactic system were published two years ago in *Mt. Wilson Contr.*, No. 153. Further photometric studies, mainly by Hoffmeister at Bamberg, make it now possible to add nine stars to the list. The periods, as usual, are known with much higher accuracy than the magnitudes at maximum and minimum, but unless the error in the median brightness exceeds half a magnitude, the mean error of the parallax is probably less than 25 per cent, that is, on the average less than 0.″0002.

Designation	Galactic		Period in Days	Med. Mag. Visual	Parallax	Distance (Unit is 100 Parsecs)		
	Long.	Lat.				Radial	Projected	From Plane
140 X Arietis. . .	137°	−40°	0.651	8.9	0″.0014	7.1	5.5	− 4.6
141 SS Tauri. . . .	148	−38	0.370	12.2	0 .00032	31.2	24.6	−19.3
142 SW Tauri. . .	158	−29	1.584	9.4	0 .00083	12.0	10.5	− 5.8
143 RZ Tauri. . .	147	−18	0.172	10.0	0 .00083	12.0	11.4	− 3.7
144 —Aurigae . .	134	+ 1	18.356	9.2	0 .00022	45.5	45.5	+ 0.8
145 ST Tauri. . .	161	− 7	4.035	8.6	0 .00083	12.0	11.9	− 1.5
146 RW Cancri. .	164	+43	0.548	11.0	0 .00052	19.2	14.0	+13.1
147 V Leon. min.	166	+58	0.544	10.7	0 .00060	16.7	8.9	+14.2
148 W Serpentis.	296	+57	17.113	10.3	0 .00014	71.	39.	+60.

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[1] 4 observations.

[2] C. D. − 28°.2169. Position from C. D. catalog. 3 observations.

[3] 30 observations. Period is about 9 months. Light curve is steeper on ascending side than on the descending side.

[4] and [5] 30 observations. Period is short or irregular.

[6] $6^s.2$ following, 113″ south of B. D. +10°.1221. 25 observations. Period is long.

[7] $14^s.1$ preceding, 82″ south of B. D. +8°.1496. 25 observations. Period is long.

[8] 9 observations. Period is long. Position estimated from the B. D. Chart.

[9] 23 observations. Period is long.

[10] 3 observations.

[11] Algol type. Faint on June 7, 1915, and February 27, 1916, hour unknown. $9^s.5$ following, 7′0″ north of B. D. +55°.3036.

[12] 40 observations. Period about 12 months.